

APRIL 11, 1989  
NARRATIVE FOR  
A PORTION OF THE THREE FORKS-BIG TIMBER, MONTANA  
OIL AND GAS DEVELOPMENT POTENTIAL MAP

Introduction

This narrative discusses the easternmost part of the Three Forks-Big Timber Oil and Gas Development potential map. This portion of the Miles City District covers the western one-fourth of Wheatland and Sweetgrass Counties. It comprises a strip 8-12 miles wide (east-west) and 126 miles long (north-south). The Wheatland County portion lies on the southeast edge of the Little Belt Uplift and the east edge of the Castle Mountains where the dip is plunging into the Wheatland syncline. The Sweetgrass County portion is in the Crazy Mountains Basin and the Beartooth Uplift. Currently, there are no producing oil and gas wells in the described area.

Occurrence Potential

From the Musselshell River, on the north, to the vicinity of McLeod on the Boulder River, to the south (72 percent of the area), is considered to be of high oil and gas occurrence potential. At least 5,000 feet of sedimentary rocks of lower Cretaceous through Cambrian age are present on Big Elk Dome (except for Triassic, Permian, and Silurian, which are missing). (Type log: Norris 1 Federal, NESE 28-7N-13E.)

A thick sequence of Tertiary-Upper Cretaceous Livingston Formation, plus rising topography, increases the depth to 15,000 to 30,000 feet in the vicinity of the south peak of the Crazy Mountains. Cretaceous, Jurassic, and Pennsylvanian gas production is established 25-40 miles to the east of Big Elk Dome. Oil production, from the Lower Cretaceous, occurs about 20 miles southeast of McLeod.

From about 10 miles south of McLeod, southward for 30 miles, Precambrian rocks are exposed at the surface of the Beartooth Uplift. This area is of low occurrence potential.

Discussion of Development Potential Ratings

No part of this area is considered to be high development potential, because there are no producing fields, and only five tests for oil and gas have been drilled in the last 15 years. The older wells failed to report significant oil and gas shows. Slight gas and oil shows are indicated on Big Elk Dome.

However, a sedimentary section is present that has proven productive to the east and southeast so most of the area is rated as a moderate development potential. Exploratory drilling during the next 15 years is expected to be similar to the past 15 years, so 5 wells are anticipated.

The southernmost 25 miles is on, or adjacent to, the Beartooth Uplift and rated as low to very low or unknown. Another low rated area is the south peak of the Crazy Mountains. The area is topographically high and has Tertiary intrusives on much of the surface. The shape of the intrusive body is not known except at the surface. One or two wells may be expected in these potentially low and very low areas in the next 15 years.

### REFERENCES CITED

Mallory, W. W. (ed.), 1972, Geologic Atlas of the Rocky Mountain Region: Rocky Mountain Association of Geologists, pp. 30, 34, 37-39, and 56.